## ASCII Character Codes

| DEC | CHAR | DEC | CHAR | DEC | CHAR |
|-----|------|-----|------|-----|------|
| 000 | CTRL-@ | 043 | + | 086 | V |
| 001 | CTRL-A | 044 | , | 087 | W |
| 002 | CTRL-B | 045 | - | 088 | X |
| 003 | CTRL-C | 046 | . | 089 | Y |
| 004 | CTRL-D | 047 | / | 090 | Z |
| 005 | CTRL-E | 048 | 0 | 091 | [ |
| 006 | CTRL-F | 049 | 1 | 092 | \ |
| 007 | CTRL-G | 050 | 2 | 093 | ] |
| 008 | BS | 051 | 3 | 094 | ↑ |
| 009 | HOR. TAB | 052 | 4 | 095 | — |
| 010 | LINE FEED | 053 | 5 | 096 | ` |
| 011 | VERT. TAB | 054 | 6 | 097 | a |
| 012 | FF | 055 | 7 | 098 | b |
| 013 | CR | 056 | 8 | 099 | c |
| 014 | CTRL-N | 057 | 9 | 100 | d |
| 015 | CTRL-O | 058 | : | 101 | e |
| 016 | CTRL-P | 059 | ; | 102 | f |
| 017 | CTRL-Q | 060 | < | 103 | g |
| 018 | CTRL-R | 061 | = | 104 | h |
| 019 | CTRL-S | 062 | > | 105 | i |
| 020 | CTRL-T | 063 | ? | 106 | j |
| 021 | CTRL-U | 064 | @ | 107 | k |
| 022 | CTRL-V | 065 | A | 108 | l |
| 023 | CTRL-W | 066 | B | 109 | m |
| 024 | CTRL-X | 067 | C | 110 | n |
| 025 | CTRL-Y | 068 | D | 111 | o |
| 026 | CTRL-Z | 069 | E | 112 | p |
| 027 | CTRL-[ | 070 | F | 113 | q |
| 028 | CTRL-\ | 071 | G | 114 | r |
| 029 | CTRL-] | 072 | H | 115 | s |
| 030 | CTRL-↑ | 073 | I | 116 | t |
| 031 | CTRL-— | 074 | J | 117 | u |
| 032 | SPACE | 075 | K | 118 | v |
| 033 | ! | 076 | L | 119 | w |
| 034 | " | 077 | M | 120 | x |
| 035 | # | 078 | N | 121 | y |
| 036 | $ | 079 | O | 122 | z |
| 037 | % | 080 | P | 123 | { |
| 038 | & | 081 | Q | 124 | | |
| 039 | ' | 082 | R | 125 | } |
| 040 | ( | 083 | S | 126 | ~ |
| 041 | ) | 084 | T | 127 | DEL |
| 042 | * | 085 | U | | |

CTRL = Control Character  BS = Backspace
CR = Carriage Return  FF = Form Feed  DEL = Rubout

## Cromemco 16K Basic Features

- Semi-compiling design — combines the best features of both interpreters and compilers — yields exceptionally fast execution times

- Allows 3 types of variables:
  * integer (2 bytes) range +32767 to −32768
  * short floating point (4 bytes) range $\pm 9.99E+62$ to $\pm 9.99E-65$
  * long floating point (8 bytes) range $\pm 9.99E+62$ to $\pm 9.99E-65$

- 14 digit accuracy

- Advanced floppy disk I/O capabilities

- Binary and ASCII storage for both programs and data

- Sequential and random access files

- English language error messages

- Syntax error checking as program is entered

- Dynamic error trapping

- TRACE and immediate mode to facilitate debugging

- Advanced string handling capabilities

- Advanced output formatting capabilities

- Chaining of programs

- Direct machine language interaction



# Cromemco 16K Extended Basic Instruction Set
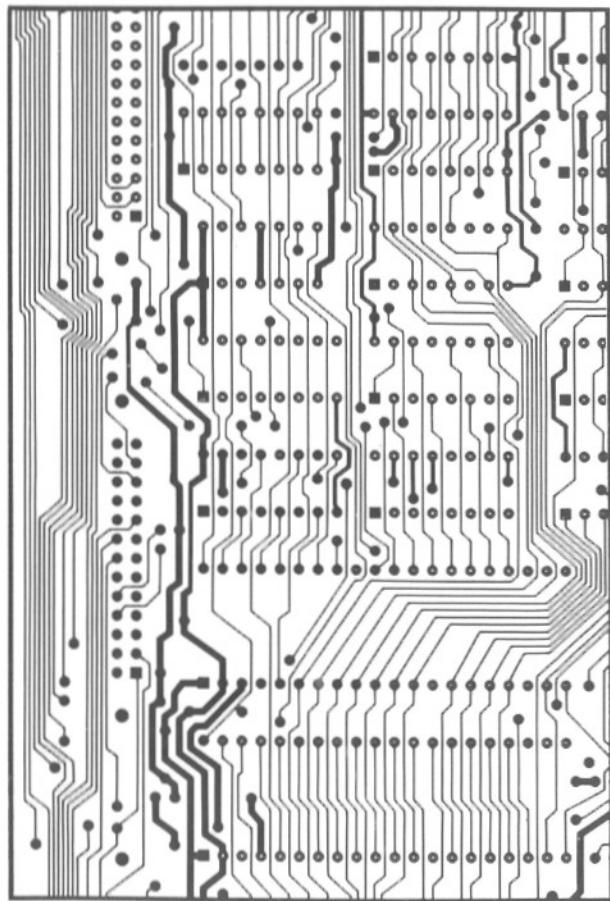
# Cromemco 16K Basic Instructions

## Abbreviations:

| | |
|---|---|
| A, B, C, D | variables |
| m, n, p, r | integers |
| E, F, G, H | expressions or variables (H may be relational) |
| L1, L2 | line numbers |
| stmnt | statement |
| strng | string expression |
| [ ] | optional parameter |
| { } | choose one parameter |
| . . . | may be repeated |
| fn | file number |
| p1, p2 | parameters |
| s | one letter |
| * | do not use with line no. |
| ** | use only with line no. |
| † | disk basic only |
| byte | byte value |
| fmt | format |
| dr: | drive: |

ABSolute value (E)
ASCii (A$)
ATN(E) arctangent
* AUTOLine L1, L2

BINAND (A, B)
BINOR (A, B)
BINXOR (A, B)
† BYE

CHR$ (A) ASCI I character
CLOSE [\fn\]
* CONtinue
COSine (E)
† CREATE strng

** DATA [A] [strng] [,b . . . ]
DEGree
DELETE L1, L2
DEF FNs (A) = E
DIM A (m) [, B(n, p, r) . . .]
†* DIRectory [dr:] [strng]
† DISK [dr:]

ECHO
** END
ENTER strng
† ERASE strng
ESCape
EXPonent (E)

{FOR A = E TO F [STEP G]
{NEXT A
FRActional part (E)
FREe space (E)

GET \fn [,p1 [,p2] ] \ [E, F . . .]
GOTO L1
{GOSUB L1
{RETURN

IF H THEN {L1} {stmnt}
IMODE
INPUT [{\fn, p1, p2\} {strng}] A[,B . . .] [;]
INTEGER A [ (m) ] [, B . . .]
INTeger (E)
INP (m)
IOSTAT (fn, m)
IRN (E) integer random number generator

LENgth (A$)
[LET] A = E
LFMODE
LIST [strng,] [L1[,L2] ]
LONG A [ (m) ] ].B . . .]
LOGarithm (E)
† LOAD strng

MAXimum (E)
† MAT A = E
MINimum (E)

NOECHO
NOESCape
NoTRACE

ON E {GOTO} {GOSUB} L1
ON ERROR {STOP} {GOTO} {GOSUB} L1
ON ESCape {STOP} {GOTO} {GOSUB} L1
OPEN \fn [,p1[. p2] ] \ strng
OUT m, byte

PEEK (m)
POSition (A$, Y$, n)
POKE m, byte
{PRINT} {@} [\fn, p1, p2\ ] [USING fmt] [E [ {,} {;} F . . .] ]
PUT \fn [,p1 [,p2] ] \[E, F . . .]

RADians
RANDOMIZE
READ A [,B . . .]
REM [anything you want]
RESTORE
* RENUMBER
† RENAME strng-old, strng-new

RND (E) random number generator values
RUN [strng]

† SAVE strng
SCRatch
SET m,A
SFMODE
SGN (E) algebraic sign
SHORT A [ (m) ] [,B . . . ]
SINe (E)
SPaCe (E) use with PRINT
SQR (E) square root
** STOP
STR$ (n) string
SYStem (E)

TANgent (E)
TAB (E) use with PRINT
TRACE

USeR (A, p1 [,p2 . . .] )

VALue (A$)

## Hexadecimal — Decimal Conversion Table

| HEXADECIMAL COLUMNS | | | | | | | |
|---|---|---|---|---|---|---|---|
| **4** | | **3** | | **2** | | **1** | |
| HEX | DEC | HEX | DEC | HEX | DEC | HEX | DEC |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 4,096 | 1 | 256 | 1 | 16 | 1 | 1 |
| 2 | 8,192 | 2 | 512 | 2 | 32 | 2 | 2 |
| 3 | 12,288 | 3 | 768 | 3 | 48 | 3 | 3 |
| 4 | 16,384 | 4 | 1,024 | 4 | 64 | 4 | 4 |
| 5 | 20,480 | 5 | 1,280 | 5 | 80 | 5 | 5 |
| 6 | 24,576 | 6 | 1,536 | 6 | 96 | 6 | 6 |
| 7 | 28,672 | 7 | 1,792 | 7 | 112 | 7 | 7 |
| 8 | 32,768 | 8 | 2,048 | 8 | 128 | 8 | 8 |
| 9 | 36,864 | 9 | 2,304 | 9 | 144 | 9 | 9 |
| A | 40,960 | A | 2,560 | A | 160 | A | 10 |
| B | 45,056 | B | 2,816 | B | 176 | B | 11 |
| C | 49,152 | C | 3,072 | C | 192 | C | 12 |
| D | 53,248 | D | 3,328 | D | 208 | D | 13 |
| E | 57,344 | E | 3,584 | E | 224 | E | 14 |
| F | 61,440 | F | 3,840 | F | 240 | F | 15 |

| 7 6 5 4 | 3 2 1 0 | 7 6 5 4 | 3 2 1 0 |
|---|---|---|---|
| BYTE | | BYTE | |